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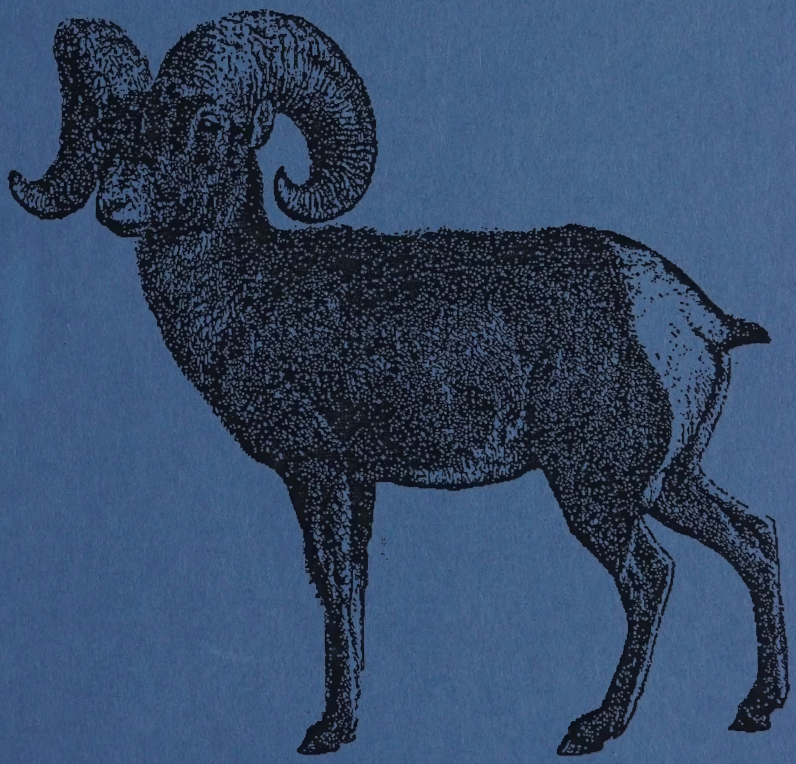

A PROGRESS REPORT ON WILDLIFE HABITAT ON PUBLIC LANDS IN CALIFORNIA ADMINISTERED BY THE U.S. BUREAU OF LAND MANAGEMENT

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Prepared by:

United States Department of the Interior
Bureau of Land Management
California

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BUREAU OF LAND MANAGEMENT

WHERE THE WILDLIFE ROAM

The Bureau of Land Management (BLM) manages 17.1 million acres of public land in California (17% of the state) and 1.5 million acres of public land in northwestern Nevada. It also has responsibility for about 47 million acres of subsurface mineral resources representing 47% of the state.

The BLM balances the management of public lands and resources so they are considered in a combination that will best serve the American people. By Congressional direction, BLM manages the public land under the multiple-use concept that includes environmental protection, resource development and recreation.

- BLM lands serve the recreation needs of millions who use them for hiking, sightseeing, rafting, rockhounding, camping, fishing, hunting, cycling, bird watching, scenic touring, gold panning, landsailing and other fun activities.

- BLM protects hundreds of areas with native American, archaeological, educational, historical, botanical, scenic, wildlife, and wilderness values.

- BLM lands contain energy resources such as oil, natural gas, wind, and geothermal, substantial mineral deposits such as gold, sodium, potash, boron and rare earths, and are available to tap wind energy resources.

- BLM manages resources for wildlife habitat, livestock grazing, wild horse and burro protection, wildfire protection, timber production, rights-of-way to assist cities and towns to meet energy and communication needs, clean air and water, and the security and economic needs of the Nation, state and local communities.

- BLM also manages many special areas in the state such as the California Desert Conservation Area, Desert Tortoise Natural Area, King Range National Conservation Area, Bizz Johnson Hiking Trail, East Mojave National Scenic Area, Carrizo Plain Natural Area, Coachella Valley Fringe-Toed Lizard Preserve, and more than a hundred Areas of Critical Environmental Concern, all extremely important to today's citizens and future generations.

Please help us protect these lands and resources.

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
CALIFORNIA STATE OFFICE

Dear Reader:

The Bureau of Land Management (BLM) has a large and aggressive wildlife program in California. In 1989, BLM will spend $10 million on wildlife management and habitat acquistions.

This report highlights BLM's statewide wildlife habitat management program in California. It discusses our broad management program for fish and wildlife resources on the public lands and focuses on some of our principal opportunities and accomplishments. Also, it provides for increased understanding of the Bureau's approach to management of fish and wildlife resources and the results of management.

Of particular interest is the section on Special Areas and Wildlife, where areas such as Cache Creek and the Carrizo Plain are discussed, and wildlife such as the tule elk, bighorn sheep, Owens pupfish, peregrine falcon and the Coachella Valley fringe-toed lizard are highlighted. The accomplishments are truly significant and future challenges many, but most would readily agree that the Bureau, the public, and other agencies have together made a major impact for the good of special areas and wildlife in California.

Thus, this report should have a variety of benefits. It will help the reader see that the limited funds available are channelled into management actions and projects considered most urgent by the public and Bureau. It will enable the reader to look at the BLM programs in a larger context and to better understand overall Bureau priorities for fish and wildlife resource management. Hopefully, it will encourage continued cooperation in solving problems and in enhancing opportunities associated with fish and wildlife.

Currently, we are preparing California Fish and Wildlife 2000 plans to guide the wildlife program into the next century. "Where the Wildlife Roam" begins a new emphasis on this important program.

Sincerely,

Ed Hastey

Ed Hastey
State Director

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PART ONE—THE CALIFORNIA PROGRAM

WILDLIFE RESOURCES ON BLM LANDS

The significance of BLM fish and wildlife resources can not be over-estimated in California. With a population of over 27 million people, there is considerable impact on wildlife and great need for wildlife habitat which supports a large and diverse number of wildlife. The habitat of the bighorn sheep in the Old Dad Mountains, the tule elk in Owens Valley, the pupfish in Soda Lake, the bald eagles in Cache Creek, and the fringe-toed lizard in the Coachella Valley are among the many concerns of the Bureau. California BLM manages a significant amount of wildlife habitat which totals 17 million plus acres of public lands, sustaining an abundance and diversity of fish and wildlife resources prized for their recreational, ecological, scientific, social, historical, economic, cultural, educational, and esthetic values.

The public lands administered by the Bureau are permanent or seasonal home for over 800 species of mammals, birds, reptiles, fish, and amphibians. Managing the habitat for these species for the benefit of all citizens is a complex task. To achieve this, the Bureau cooperates closely with Federal and State fish and wildlife agencies, interest groups, and the public.

Since the passage of the Federal Land Policy and Management Act (FLPMA), considerable progress has been made in improving management of the public lands for wildlife and fisheries. Some species, such as bighorn sheep and tule elk, have increased significantly. Others have remained stable and some have declined. Some of the decline, especially in the case of the desert tortoise, has been caused by the encroachment of human activities, particularly on private land. However, one of the positive results of FLPMA was to make available to the Bureau explicit direction and support for appropriation of funds for inventory of fish and wildlife resources on the public lands. This has enabled the Bureau to get a more accurate understanding of the variety and abundance of both game and nongame species and their habitats on public lands.

WILDLIFE BENEFITS

The Bureau works closely with Federal and State agencies to maintain the fish and wildlife resources at such levels that provide an enjoyable experience for the people who use them. Fish and wildlife on the public lands produce both primary and secondary benefits. The primary benefits accrue to the hunters, fishermen, and consumptive users who combine efforts, skill, their own equipment, and occasionally the services of a guide and outfitter to produce valuable recreation experiences. The secondary benefits from fish and wildlife accrue to the communities whose businesses sell equipment, transportation, food and lodging to hunters, fishermen, tourists, and wildlife viewers who visit the communities in pursuit of their recreation.

It is roughly estimated that hunters annually use California public lands for nearly one million days of hunting worth 30 million dollars in primary benefits. Over three quarters of a million days of fishing took place on the public lands worth ten million dollars in primary benefits to fishermen. Observing wildlife was undoubtedly important to campers, hikers, and motorized travelers who spend 75 million hours on BLM lands and waters each year. Conservatively, BLM estimates California wildlife viewing is worth $70 million in primary benefits.

Another important value of wildlife is to maintain their place in the ecological niche of life on planet earth. All creatures play a role in the biological diversity of an area. The Bureau has more diversity on its lands than any other agency in California and in the nation.

SPECIAL WILDLIFE

To ensure that fish and wildlife resources on the public lands will continue to be viable and managed for the use and enjoyment of the American people, the BLM works closely with the State to maintain or increase fish and wildlife at or near levels the available habitat can support. BLM also works to protect and restore those species that have been designated as threatened or endangered by the U.S. Fish and Wildlife Service (FWS) as well as those species that are declining but may not have been formally designated. When competition exists between wildlife and other uses, BLM strives to maintain optimum habitats by mitigating adverse impacts where possible.

The habitat on the public lands, occupied by threatened and endangered species, totals at least one quarter of the 17.1 million acres. A variety of management practices and related procedures are used to restore them, including protection of key habitats such as nesting and roosting areas, and acquisition of key habitats and cooperation with State-wildlife agencies on habitat management projects. One such method is "transplanting"—removing animals from areas where their survival is threatened or where they are abundant—to unoccupied habitat or to areas where populations are low. This technique has been especially successful in restoring a number of species, including desert bighorn sheep, tule elk, pronghorn antelope, peregrine falcons, and various other species of wildlife and fish. For example, prior to the passage of the FLPMA, desert bighorn sheep were in decline in the desert. Now, significant populations exist within the historic range of this species due to research and transplanting efforts of BLM, State wildlife agencies, and private organizations.

California public lands have 19 federally listed threatened and endangered animals and eight threatened and endangered plants. A number of State-listed rare, threatened, or endangered species also occur on the public lands. Where such species occur, management directives and actions are addressed in the land use planning process and in development of habitat management or other resource management plans.

BLM's policy on candidate and sensitive species states that BLM shall carry-out management, consistent with the principles of multiple-use, for the conservation of these species and their habitats. The Bureau will ensure that actions authorized, funded, or carried-out do not contribute to the need to list any of these species as threatened or endangered. This will be done through research, planning, monitoring, and coordination.

In the 1950s and 1960s, BLM established, in cooperation with the California Department of Fish and Game, 14 National Cooperative Land and Wildlife Management Areas (see Appendix 4). These Areas, ranging in size from 5,000 to 306,000 acres, totalled over 800,000 acres of public land, and are managed for the development, conservation, use and maintenance of their natural resources, including recreation and wildlife. The Bureau works cooperatively with the California Department of Fish and Game in determining their proper development, conservation, use and maintenance.

In California, preserving existing habitat, restoring degraded habitats and participating in recovery plans are high priority responsibilities. Much of the credit for the BLM's success goes to State and Federal agencies, and particularly to private organizations and user groups who participate actively in planning or conducting their activities on the public lands in a manner that enhances fish and wildlife habitat.

CHALLENGE COST SHARE OPPORTUNITIES

For many years, the California (BLM) has been extremely successful in attracting outside sources of contributed and matching funding, especially for important wildlife projects. We have also expanded our in-house use of volunteers for wildlife work. California like other public land states has a large and diverse human population that exert strong pressures on wildlife habitat. California also has many strong wildlife advocate groups that have large amounts of energy, enthusiasm, and funds to further their cause. These many and varied groups are willing and anxious to augment and expedite the accomplishment of beneficial projects on BLM lands.

As we continue to pursue the "challenge cost share" concept (matching non-Federal resources or funds with Bureau funding), our main need is to take advantage of the enthusiasm and currently available outside funding by being much more aggressive with Bureau matching funds.

Over the past several years, we have taken advantage of over $2.5 million worth of contributed funds, labor, and materials from a wide spectrum of agencies, groups, and organizations. These contributions resulted in significant on-the-ground accomplishments benefitting wildlife and habitat on BLM lands. Specifically, in Fiscal Year 1988, we turned $760,000 of contributed funds, and $230,000 of Bureau dollars, into 50 on-the-ground projects.

The projects for the near term are firm, in terms of the willingness of the outside parties and the front-end work done, to scope out the work in a fairly detailed way. The Bureau receives large amounts of good will in this program in California, not just from the cooperating group, but also from a large number of informed citizens.

The appendices include two tables that summarize our current "challenge cost share" program for 1989 and potential opportunities. The opportunity to greatly expand the challenge cost sharing has been barely tapped. In California's wildlife program alone, within opportunities presently on hand, we are estimating a $1,750,000 funding base for potential opportunities. The State of California, The Nature Conservancy, Desert Tortoise Council, Bighorn Sheep Research Institute, Bighorn Sheep Society, and the California Native Plant Society are only a few of the organizations that have, and we expect will continue to participate in the Challenge Cost Share program. (See Appendices 1 and 2)

CALIFORNIA ENVIRONMENTAL LICENSE PLATE (CELP) FUNDS

The Bureau of Land Management receives funding from the California Department of Fish and Game for wildlife habitat improvement work. Much of this funding is derived from the sale of personalized automobile license plates. Project work completed with these funds in recent years includes water developments, prescribed burning and seeding to improve deer forage in several areas within California.

The California Department of Fish and Game (CDFG) allocates a portion of the CELP Fund for improvement of wildlife habitat on lands owned or controlled by the BLM.

The CDFG and the BLM have prepared a joint program of work covering wildlife habitat and range improvement projects on lands owned or controlled by BLM. For cooperatively funded projects the CDFG desires to provide funding to cover direct expenditures related to habitat improvement projects. The principal objectives are to use the funds for paying actual and necessary direct costs of accomplishing the project for which the funds were advanced.

The funding provides for such items as planning, studies, inventories, engineering design, writing of environmental assessments, operation, maintenance and monitoring of the projects. Projects have included peregrine falcon reintroduction, pond reconstruction, prescribed burn, bald eagle nest protection, water development, improvement of marsh habitat, riparian revegetation, dam construction, etc.

WILDLIFE EXPERTISE AND PROGRAM COORDINATION

California BLM employs approximately 25 wildlife biologists and two fisheries biologists. These specialists, all college educated and with a wide variety of professional experience, are the backbone of the Bureau's program. Specialties include staff trained in the ecology of the desert tortoise, in birds of prey, in threatened and endangered species and in anadramous fisheries.

Since the Bureau is responsible for managing wildlife habitat on the public lands, responsibility for the animals themselves rests with others. As a result, BLM works very closely with California Department of Fish and Game and the U.S. Fish and Wildlife Service to carry out our joint responsibilities. We operate under various cooperative agreements with Fish and Game, assuring that all actions taken on the ground to benefit wildlife and fisheries are fully thought out. In many cases, plans are developed cooperatively.

Other organizations, like The Nature Conservancy, the Trust for Public Lands, Defenders of Wildlife, Audubon Society, Izaak Walton League, and the Wildlife Conservation Board, play a key role in assisting the Bureau in many programs. Many land acquisition opportunities to benefit wildlife and fish are brought to our attention by these groups, and they in turn play a crucial part in helping us acquire properties.

OTHER FUNDING

Other examples exist by which wildlife projects are supported and funded on public lands. The Paynes Creek Wetland Habitat Enhancement Project was assisted with a $160,100 contribution from the State Wildlife Conservation Board (WCB).

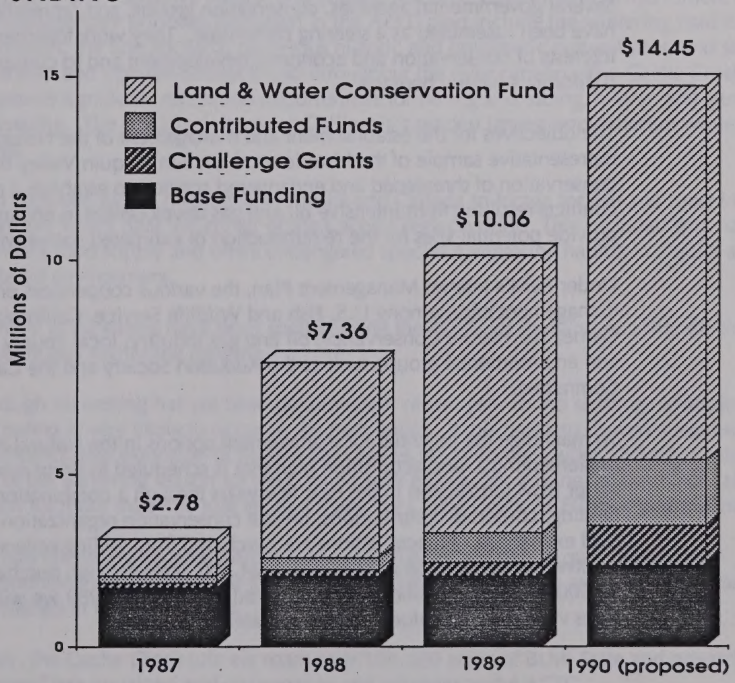
The Nature Conservancy has played a key role through their Stewardship program in cooperatively managing many areas such as Carrizo Plains Natural Area, Big Morango, and the Coachella Valley Fringe-Toed Lizard Preserve.

With the recent passage of the California Wildlife, Coastal and Parkland Act of 1988 (Proposition 70), an additional $81.3 million is now available to the WCB and Department of Fish and Game for wildlife habitat acquisitions. Some of this money is earmarked for specific projects, and some of these projects relate to BLM programs.

Over the past five years, the Department has contributed nearly $600,000 to BLM for wildlife project work, under various State programs such as ERF, ELP and Hill Bill. These contributions have enabled us to essentially double our ability to accomplish wildlife habitat improvement work.

Private industry is also involved. The Sacramento Metropolitan Utility District (SMUD) and the California Energy Commission contributed over $200,000 for a study of wintering bald eagles in the Cache Creek area. The electric industry has also contributed nearly $50,000 for the development by BLM of computerized information systems dealing with raptors and endangered species. Industry has also contributed more than a million dollars for wildlife management as part of Endangered Species Act compliance.

WILDLIFE FUNDING



PART TWO—SPECIAL AREAS AND WILDLIFE

BLM's wildlife story can best be told by examining some examples of our efforts to increase and restore wildlife and fish habitat. On-the-ground work is the end result of years of planning, budgeting and coordination with interested parties and agencies.

CARRIZO PLAIN NATURAL AREA

The Carrizo Plain Natural Area is a block of undeveloped land 50 miles west of Bakersfield, California. It is managed by the Bureau of Land Management in conjunction with other Federal, State, local, and private agencies and organizations to protect and enhance natural ecosystems and threatened and endangered species of plants and animals. The reserve encompasses 180,000 acres of nearly extinct grasslands, wetlands, and brushlands that represent the remaining 4% of the original 7.5 million acres of wildlands of the San Joaquin Valley. This last remnant of wildland in the Central Valley ecotype provides the life support system for three species of endangered or threatened animals (San Joaquin kit fox, kangaroo rat, blunt-nosed leopard lizard) and three species of sensitive plants. Pronghorn antelope have been reintroduced to the reserve after a 75-year absence from the Central Valley and tule elk have been released adjacent to the Carrizo Plain. The Carrizo Reserve is located between two BLM-managed national wildlife cooperative areas — Temblors and Caliente.

Land ownership in the 180,000-acre reserve is divided among BLM (77,800 acres, 28,500 of which were recently purchased from The Nature Conservancy), The Nature Conservancy (30,000 acres), California Department of Fish and Game (2,000 acres), and a few private landowners (70,200).

Several governmental agencies, conservation groups, and representatives from private industry have been assembled as a steering committee. They work together to reconcile the competing interests of conservation and economic development and to conserve a significant portion of California's natural heritage.

The objectives for the establishment and management of the Natural Area are to preserve a representative sample of the historic southern San Joaquin Valley flora and fauna, to promote conservation of threatened and endangered species, to establish a mechanism for resolution of conflicts resulting from intensive oil and gas development in endangered species habitat, and to provide potential sites for the reintroduction of extirpated native wildlife species.

Under BLM's Interim Management Plan, the various cooperators provide for a coordinated management effort among U.S. Fish and Wildlife Service, California Department of Fish and Game, The Nature Conservancy, oil and gas industry, local county government, landowners, and environmental groups such as the Audubon Society and the Carrizo Plain Steering Committee.

To maximize the potential for management options in the Natural Area, the BLM is implementing a land acquisition plan that is scheduled to bring most of the 180,000 acres under BLM jurisdiction in the next few years through a combination of Federal and State funding, corporate contributions, private conservation organization contributions, and BLM land exchanges. All acquisitions are purchased from willing sellers and no condemnation is involved. During 1988 BLM acquired 24,300 acres through purchase ($4.1 million) and 28,500 acres ($4.8 million) were acquired in 1989. In 1989 we will also plan to acquire 1,600 acres via exchange valued at approximately $1 million.

Opportunities beyond 1989 are estimated to cost $6 million, which includes $200,000 for labor and support costs needed to process the acquisitions and land exchanges. This funding would result in the acquisition of between 30,000 and 40,000 acres in 1990.

Currently, endangered species recovery plans are being revised, the land acquisition plan being implemented, and the coordinated land use management plan is being completed. A Habitat Conservation Plan for Kern County is in its final stages of completion. Land use guides are being followed and BLM biologists and rangers have been selected to begin protection, revegetation and monitoring actions as well as coordination with other agencies and organizations. The Steering Committee continues to be involved with management implementation.

The major management actions to acquire the 180,000 acres in the Carrizo Plains has been and will be jointly accomplished between the BLM and The Nature Conservancy. The Nature Conservancy has provided manpower and funds to assist the Bureau in the acquisition as well as the exchange of properties. They have facilitated the identification of habitat requirement of wildlife species and will provide on-the-ground management capability upon full implementation.

CACHE CREEK RESEARCH NATURAL AREA

Cache Creek, tucked along State Highway 20 in Lake and Yolo Counties and only a few hours drive from San Francisco and Sacramento, flows through one of the areas least disturbed by human intrusions. This 35-mile stretch of creek, from Clear Lake to the town of Rumsey, is part of a storybook setting singled out by the Bureau of Land Management for special care.

Public lands fronting Cache Creek were designated as a Research Natural Area/ACEC in 1985 in recognition of sensitive natural and cultural resource values found in this remote canyon. The management priorities discussed in the ACEC plan include the wintering bald eagle population, the tule elk herd, numerous historic and prehistoric cultural sites, and sensitive watershed and riparian habitat found throughout the river canyon. The Cache Creek area also represents significant recreation opportunities for rafting and tubing, hiking, and general sightseeing. The corridor is home to California's second largest population of wintering bald eagles.

Each October, eagles migrate from Alaska and Canada to forage for fish and roost in the trees of Wilson Valley near the center of the Cache Creek corridor. This secluded spot has an abundant food supply and offers endangered species a wintering habitat in a quiet and sheltered environment.

As many as 62 eagles have been spotted using the ACEC for foraging, soaring, daytime perching and night-time roosting.

Although no nesting has yet been documented, recent year-round sightings of adults indicate that paring is very likely to occur in the near future. If this happens, it would represent a significant range extension of nesting bald eagles in California's wilds. Mid-April signals the end of the wintering season for the Cache Creek eagles, but it is the beginning of calving season for more than 400 tule elk that make the Cache Creek ACEC their permanent home.

The tule elk nearly became extinct in the early 1870s because of over-hunting. By reintroducing the elk into their former habitat in the Cache Creek area, this herd was re-established in the early 1920s.

Today, the Cache Creek tule elk roam over 100,000 acres of BLM, State and privately managed oak grassland and chaparral in and adjacent to the ACEC.

The Bureau administers about one-third of the elk range, where food, water and cover, critical to the survival of the animals, are found.

Many other wildlife species, such as blacktail deer, feral pig, black bear, mountain lion and bobcat, are also seen here. The area's feathered occupants include quail, dove, mallard ducks and wild turkey. A wide variety of fish are found in Cache Creek including catfish and numerous carp, the primary food source for the wintering eagles.

In 1987 the BLM and the California Department of Fish & Game signed an MOU for cooperative management of state and Federal lands within a portion of the Cache Creek drainage. Contributed funding from the state for habitat development projects on public lands has been significant in recent years. These projects have included seedings for the tule elk and several prescribed burns.

As an ongoing initiative the BLM is coordinating with the Forest Service and the California Department of Game and Fish to discuss interagency plans to provide for protection and enhancement of existing riparian habitat found on Cache Creek and the North Fork of Cache Creek. This area includes the entire North Fork watershed (BLM, Forest Service, CDF&G) and the Cache Creek ACEC from Clear Lake Dam downstream to Rumsey (BLM, CDF&G).

Proposed projects within the area include riparian vegetation reestablishment, exotic vegetation eradication, streambank protection, and soil stabilization on site-specific watershed problem areas. Additionally, because of recreation demands by the public, there is need for visitor information facilities, hazard reduction, river access, and greater on-the-ground BLM presence in the Cache Creek ACEC.

An essential component to the management of this area includes the acquisition of 7,500 acres of critical riparian habitat along both Cache Creek and its North Fork. Since 1984, we have acquired (primarily through exchange) 3,000 acres on or adjacent to Cache Creek and the lower reaches of its North Fork. If opportunities to exchange some of these parcels for other public lands become available, this course of action will be pursued. If not, as has already become the case on a number of key parcels, direct purchase will be negotiated. The long-term acquisition goal of the ACEC Management Plan is to acquire remaining private land on the North Fork downstream of Highway 20 and on Cache Creek between Clear Lake Dam and State Highway 16. These lands are identified in the Clear Lake Resource Area Habitat Acquisition Plan and will be acquired in the priority order assigned in the plan. Opportunities also exist for resource protection and improvement. Projects will include riparian vegetation reestablishment and exotic vegetation removal on approximately 5 miles of Cache Creek and the North Fork.

Our emphasis on using funds in the Cache Creek ACEC will focus on developing contributed funding sources, volunteer efforts, and Challenge Cost Share projects. We will also proceed to develop interagency cooperation and user/public support for BLM's management initiatives in this area.

KING RANGE NATIONAL CONSERVATION AREA/MATTOLE ESTUARY

The Mattole Estuary lies adjacent to the King Range National Conservation Area (KRNCA) along the Pacific Ocean in northern Humboldt County. King Range was designated by Congress in recognition of its unique and complex natural values. Since designation BLM has acquired, through exchange and direct acquisition, approximately 24,000 acres within the designated boundaries. This year we will have completed most of the key land acquisitions required to effectively manage the King Range for wildlife, recreation, and protection. The Mattole Estuary is a principal emphasis area of BLM in the King Range.

Our funding priority for the King Range emphasizes factors such as wildlife and resource protection. Management requirements concentrate on several objectives including protection and enhancement of natural values, e.g., wildlife habitat and riparian areas. We have identified among our management priorities the relocation of the Mattole Campground to better protect and reduce visitor pressures on Mattole River Estuary and wetlands. We also want to continue priority acquisitions focusing on remaining beach front and Bear Creek properties in the KRNCA by developing an acquisition plan (joint initiative with Cal. Game and Fish, The Nature Conservancy and BLM) for lands critical to the management of the Mattole River Estuary. To reduce these pressures and obtain these acquisitions, costs are roughly estimated at $625,000.

Our emphasis on funding in the KRNCA will continue to rely heavily on opportunities to use contributed funding sources and volunteers. In addition, we have developed and are pursuing several significant challenge cost share opportunities with the State of California to enhance our recreation and wildlife management programs in the KRNCA. It is also important to note that we are continuing to develop user support groups who will become involved in these projects and be associated with them.

The Mattole River estuary is important to the feeding and growth of juvenile fish and acts as a nursery for Chinook salmon. Logging, grazing and road building over the years have, in part, led to a major decline of the Mattole River's salmon production. As a result, the Bureau of Land Management, California Department of Fish and Game, and local groups have joined forces using estuary restoration efforts. While most restoration projects center on improving the condition of upriver stream habitats, work in the Mattole is also aimed on another critical factor—the river's estuary.

Estuaries play a crucial and important role in the life cycle of salmon. The Mattole estuary serves as the passageway to the ocean for downstream migrating juvenile Chinook salmon and for adults returning to spawn in their natural streams. While some young salmon pass through the estuary directly to the ocean, others remain for several months. This allows the fish to grow stronger before traveling into the Pacific, giving them a much greater chance of survival.

BLM has entered into a cooperative research agreement with Humboldt State University's Cooperative Fishery Research Unit to study life patterns of the Chinook salmon. The estuary research centers on the monitoring of the salmon. During the summer months, researchers, university students and volunteers tag the captured fish as an indicator of the river where the fish were spawned. The fish are released back into the estuary, and the process is repeated every two weeks.

By using this monitoring procedure, researchers hope to determine the degree of use of the estuary, its carrying capacity, the growth of juvenile fish, population trends, the quality of water in the estuary, and salmonid food habitats. We need to know what is causing the problem of population decline before making improvements to the estuary itself.

Some restoration such as underwater structures, (logs) have been put in the estuary's rearing habitat by the Mattole Watershed Association, a local volunteer group. The structures provide places for the fish to spawn and are home to insects and other food sources. The California Department of Fish and Game has also aided in the restoration by donating funds for fencing materials.

When all of the research has been completed, the outcome will hopefully provide answers to the questions of how to increase the number of fish going into the ocean, how many fish are returning to spawn in the estuary, and the number of fish available for sport and commercial fishing.

The waters of Nooning Creek travel a meandering two-miles before entering the Mattole River. In 1973, fire swept through the Mattole area burning the entire Nooning Creek watershed and the scorching temperatures from the fire also killed steelhead trout living in the stream. BLM cleared away the blackened trees, and planted young trees, including alder, willow, and canyon oak. Willow seedlings were placed in the ground near the creek, along with Douglas fir, creating a 200-foot wide tree belt.

With the help of the Forest Service and the California Conservation Corps, an additional 23,000 seedlings were planted and the project became a BLM riparian demonstration area. Today, there are 100 fish for every 100 feet of stream.

More than a dozen environmental education stations set up along the walking trails demonstrate the relationship between the environment and aquatic life. At one station, students measure water temperatures. At another, experiments with natural vegetation will be conducted. An in-depth curriculum, corresponding to the activities associated with the outdoor classroom, is being developed by graduate students from Humboldt State University for primary and secondary school teachers. The materials include instructions for a wide variety of outdoor experiments as well as narratives discussing the importance of vegetation to the steelhead trout, plant species, timber management, soil erosion, and natural history.

Ultimately, teachers will be able to bring their students to Nooning Creek to conduct classes without any assistance. The outdoor classroom is scheduled for completion this summer, but "school" will probably not start until next spring, when fish spawning season begins. Visitors are now welcome to walk along the trails, picnic, bird watch, or even go on a hiking adventure.

DESERT TORTOISE NATURAL AREA AND CHUCKWALLA BENCH NATURAL AREA

The Desert Tortoise Natural Area (DTNA) and Chuckwalla Bench of the California Desert Conservation Area (CDCA) are two critical wildlife management areas where densities of desert tortoises are among the highest in the southwestern United States. Acquisition of private properties and exclusion of incompatible uses within these two areas, as well as in other critical habitat areas, is considered an essential management requirement to protection and survival of the tortoise. Since 1987, through the support from the Defenders of Wildlife, as well as numerous other wildlife organizations, who provided support for acquisition funding, a total of $1,500,000 has been appropriated for acquisition in the DTNA with an additional $1,300,000 earmarked for Chuckwalla Bench. With these funds we have started with acquisition of approximately 7,500 acres in the DTNA and 11,000 acres on Chuckwalla Bench.

We are continuing with our acquisition initiative in the DTNA. In fiscal year 1989 we plan to acquire 1,800 acres in the DTNA. The total Federal acquisitions identified to complete this project involves approximately 190 parcels with an aggregate acreage of 5,700. For this and next year we will proceed with a large and very complex acquisition initiative involving multiple exchanges on small individually owned parcels many of which will be less than 40 acres. Within this constraint our projected accomplishments will be to acquire 600 acres.

For Chuckwalla Bench we plan to acquire approximately 6,000 acres this year. To proceed with this project next year we are proposing to acquire an additional 3,000 acres at an estimated cost of $1,000,000.

The acquisition in both Chuckwalla Bench and the DTNA are proceeding with full support and contribution by The Nature Conservancy. The Bureau has increased its presence in the DTNA by adding a new ranger to its force, principally to spend additional time patrolling and monitoring the area. This ranger has played an increasingly important role in providing visitor information and assuring resource abuse does not take place. In addition, the Bureau is working out specific guidelines for sheep grazers who use the adjacent areas.

Outside of the DTNA and Chuckwalla Bench there continues to be critical needs and opportunities to both exchange and acquire lands that represent Category I Habitat for the desert tortoise. In expanding the initiative outside the two designated areas we will concentrate the land acquisition on areas such as along the perimeter of the DTNA (west of Mojave and east of Highway 395), Ivanpah Valley, and Fremont Peak. We estimate to acquire 1,000 acres next year requires a funding allocation of $250,000.

As part of next years initiative we plan to seek out and develop opportunities to apply the Challenge Cost Share concept to specific acquisitions and exchanges. We also believe that there may be opportunities to develop a contributed funding base from both State and private sources given the escalating concerns for the preservation of the desert tortoise. As previously indicated, acquisition and preservation of habitat for the desert tortoise has gained broad-based support from the State and a consortium of conservation and CDCA user-group organizations. At a time when there is public pressure to continue and expand present management initiatives to protect the desert tortoise, we feel the continued acquisitions and protection of important desert tortoise habitats will continue as a highly visible and essential element of the Bureau's California desert management program.

As is currently being accomplished with such agencies as the State of California Department of Fish and Game, Parks and Recreation, Cal Trans, and the California Wildlife Conservation Board, future protection and enhancement opportunities are and will be pursued for the desert tortoise. Investment in the future for the Desert Tortoise is recognized not only by the BLM but all users of the California Desert as a beneficial multiple-use. The objectives for ensuring future existence of the desert tortoise are shared by the vast majority of publics in the California Desert.

Our proposed challenge cost share funding needs, as well as an increase that will be required to manage and support the overall initiative involving the desert tortoise, will cost roughly $790,000. These costs include public awareness, brochures, signing, media presentations and informational posters; protective fencing along roads in high priority areas; raven control and predation study; population diversity, disease study and general research, inventory and monitoring; raven population monitoring studies; habitat rehabilitation and enhancement, as well as technical staffing and administrative support.

SODA SPRINGS

Soda Springs, off Highway 15 in the California Desert, sits at the very end of the Mojave River Basin and has a constant supply of nondrinkable water, a precious and rare resource in the dry desert climate, it attracts a wide variety of birds including eagles, hawks, owls, and herons. It has also become a classroom for the California State University Desert Consortium, which operates a desert studies center. The consortium offers weekend classes in subjects ranging from Mojave Desert mammals to landscape painting.

College students throughout California and other states use the facilities, which now include two labs, to conduct classroom activities. Students from California State University, Fullerton, also spend time at Soda Springs cataloging reptiles and conducting research into such animals as the Mojave tui chub, a Desert fish once thought to be extinct, but now living in man-made ponds.

BLM also runs an orientation center providing tours every Saturday and Sunday until mid-April when desert temperatures climb well above the 100-degree mark. BLM Visitor Specialists serve as guides and say that the tours give visitors a better understanding of the desert and its valuable resources such as the endangered Mojave tui chub. Recently, BLM developed and constructed nine exhibits featuring detailed displays and illustrations of the area's geology, archaeology, vegetation, wildlife, and natural history.

FISH SLOUGH NATURAL AREA

Fish Slough is a lush oasis in the middle of an otherwise arid landscape known as the Volcanic Tableland. Fish Slough, located in east central California at the north end of the Owens Valley, is approximately five miles north of Bishop. The wetland, and a portion of the surrounding Volcanic Tableland desert totaling 36,000 acres, is a BLM Area of Critical Environmental Concern (ACEC).

Fish Slough is a special place because the water that feeds and replenishes the marshland originates from the only remaining natural springs on the Owens Valley floor. This marsh creates a rich environment supporting a diversity of plant and animal life—several considered unique and sensitive. Unusual geological features create a subsurface water basin for the springs, and portray a colorful surface landscape interspersed with abrupt cliffs and volcanic terraces.

While ninety percent of the ACEC is BLM land, several federal, state, and local agencies cooperatively manage the abundant resources. Steps have been taken to preserve the area's ecosystem by striving to protect and enhance the ACEC's water quality and quantity, plants, animals, and scenic values. Long-term management also provides for scientific research in this natural laboratory.

Water is the key to the varied life found in Fish Slough. In the portion of the ACEC outside the marsh, Great Basin plants survive extreme heat and cold with very little water. Even under adverse conditions these plants are sources of food and shelter for desert animals. A few of these hardy plants include shadscale, Parry saltbush, four-wing saltbush, spiny hop-sage, bud sage, Indian ricegrass, and desert trumpet.

This high desert habitat is home for numerous species of animals including coyotes, blacktail hares, antelope ground squirrels, gopher snakes, desert spiny lizards, black-throated sparrows, rock wrens, and mourning doves.

In the marshland the availability of water increases and the vegetation changes to a type that is more water-dependent. Bullrushes, cattails, rushes, willows, and cottonwoods are a few of the plants that thrive.

Many wildlife here depend on the marsh for at least part of their life cycle. Cinnamon teal, mallards, ruddy ducks, pintails, and gadwalls frequent the marsh, especially during spring and fall migration. Raccoon, striped skunk, great blue heron, American bittern, and northern harrier also use the area.

This essential water resource also provides habitat for less common species. Le Conte thrashers, seldom observed in the Owens Valley, have been noted in the ACEC. The boulders and cliffs of the Fish Slough scarp offer excellent perching and nesting sites for golden eagles, red-tail hawks, and prairie falcons. The area has one of the highest seasonal densities of raptors found in the Owens Valley.

The water of Fish Slough is home to two native fish species and one native snail species: the Owens pupfish, the Owens tui chub, and the Fish Slough snail. Of these three species, the two fish are endangered and the snail is locally unique. Two other native fish species, the Owens speckled dace and the Owens sucker, historically occurred in Fish Slough.

Pupfish feed on insect larvae and decomposing aquatic plants. They survive in warm, salty water that has low oxygen levels. Pupfish are extremely territorial and the males will fight aggressively to protect the area they claim.

The Owens tui chub is a species that survives in the quiet, sluggish waters of the slough. Chubs feed primarily on insects and aquatic plants. Spawning occurs from late April through June in shallow areas with lots of vegetation. Like the Owens pupfish, the primary reasons the species is endangered are the loss of habitat and the introduction of exotic fish species that prey on the chub.

The Fish Slough snail can be found only in the waters of the marsh. While this microscopic snail occurs in specific locations within the wetland, little is known about its biology.

The Owens speckled dace is a sub-species of speckled dace found locally in a few sites within the Owens River drainage. The Owens dace was last recorded in Fish Slough in 1938. Its current status in Fish Slough is unknown. The status of the Owens sucker, like the Owens speckled dace, is unknown. Both may have been eliminated due to the introduction of non-native fish species.

Non-native species such as large mouth black bass, carp, and mosquito fish have become the unwanted intruders to this complex environment. They disrupt the fragile and natural balance of the wetland habitat. Their introduction is a continuing problem today.

PEREGRINE FALCON

There is now a concerted survey effort at peregrine falcon nesting sites to adequately monitor and evaluate peregrine falcon recovery in California and BLM is pleased to be playing an important role in this program.

This effort is helping BLM and others evaluate what environmental factors and management strategies have led to the Peregrine's current status in California, including peregrine falcon population trends in relation to recovery goals from the Pacific Region.

BLM is currently the lead agency in coordinating the California Peregrine falcon monitoring program with other State and Federal agencies. BLM is working to implement the Pacific Coast Peregrine Falcon Recovery Plan to the extent possible considering the various agency policies, budget constraints, and program priorities. This includes providing technical guidance and support for the peregrine falcon monitoring effort as well as ensuring that data are properly collected and stored. All suitable historical, recently occupied, and suspected peregrine falcon nests were monitored annually for occupancy and fledging success. Field-level meetings are held annually to make agency monitoring assignments for all historical and recently occupied peregrine falcon nests.

All peregrine falcon monitoring data is submitted each year to the California Department of Fish and Game for input into the California Peregrine Falcon Data Base. The various agencies meet biennially to evaluate and upgrade monitoring strategies and techniques and to revise and discuss the results of the monitoring effort. They also offer valuable support for the analysis and publication of the data collected by interested individuals.

The peregrine falcon has long been a "cause celebre" of the conservation movement in the United States because, as a predator at the end of aquatic food chains, it has been a barometer of the ill effects of accumulated pesticides widely used between the 1940s and 1960.

DDT and other such chemicals and insecticides used at that time for agricultural purposes started a continent-wide decline in populations of several species. Predatory birds feeding on ground squirrels and prairie wildlife were relatively unaffected by the DDT because the water-soluble pesticides did not move easily through dry food chains.

But those species — the peregrine falcon, bald eagle, osprey and brown pelican — feeding on water birds or fish, soon began to produce eggs with extremely thin shells, easily crushed by the parents during incubation. This threatened the survival of all these species.

During the 1970s and 1980s, as environmental residues of these chemicals began to dissipate and recovery efforts by wildlife specialists increased, there emerged a growing optimism that these species would be able to soar toward survival past this man-caused threat. The peregrine falcon in particular is a great success story.

The BLM in California, in cooperation with several other agencies, has played a key role in peregrine falcon recovery efforts by ensuring compliance with the Endangered Species Act of 1973, continuing recovery efforts and protecting peregrine falcon habitats.

Early in 1988, BLM — in a five-agency memorandum of understanding — was given the lead for coordinating the monitoring of the annual reproduction of peregrine falcons in California.

Through the years, dedicated biologists have bred Peregrines in captivity, conducted "foster" programs in which fragile eggs are incubated by scientists and returned to their nests after hatching, banded nestling falcons to monitor their survival and location, and collected eggshells and prey items from nests for pesticide analysis. These parts of the recovery effort require climbing to narrow ledges on spectacular cliffs.

Through recovery efforts like these, there is a good chance that by 1993 this species will no longer be on the Federal Endangered Species List. All that may be needed in California is four more years of funding for data collection and management, and a continuation of recent peregrine falcon populations trends.

The final push to gather data to justify downlisting or delisting the endangered peregrine falcon is well underway. In 1988, a total of 103 known and suspected falcon nests were studied in California. At least 93 of these sites were occupied by one or more falcons; breeding pairs produced 117 young. This represents more than a four-fold increase in the number of pairs since 1978, and a reproductive rate adequate to support continuing increases in numbers.

While the rate at which species are added to the endangered species list far exceeds the rate at which species are recovered or delisted, the real purposes of the Endangered Species Act are recovery and delisting. Because the peregrine falcon is so important to conservationists worldwide, the delisting of this species in the Pacific states will be a momentous occasion for the endangered species movement — an indication that the Act itself is working the way it was intended.

TULE ELK

In California, the approximately 2,500 tule elk in 19 individual herds are healthy and expanding as indicated by recent information on age and sex composition of the herds. The tule elk, one of six subspecies of elk in North America, occurs only in California. With State and Federal protection, these animals inhabit 19 separate areas. Twelve of the herds are currently causing some damage to private property. Most of the damage is to fences, irrigation equipment and crops.

At the direction of the U.S. Congress, the Tule Elk Interagency Task Force was established in 1977. The task force consists of representatives from the Bureau of Land Management (Chairman); U.S. Forest Service; U.S. Army; U.S. Navy; National Park Service: U.S. Fish and Wildlife Service; California Department of Parks and Recreation; Los Angeles Department of Water and Power; and the California Department of Fish and Game.

The task force was assigned the following responsibilities: 1) Analyze the management proposals for each tule elk herd in California; 2) Based on the analysis of the management plans, establish a list of projects needed to preserve and enhance tule elk herds; 3) Evaluate the suitability of lands that can reasonably be made available for tule elk; 4) Evaluate the potential and feasibility of achieving and maintaining a population of 2,000 tule elk in California; and 5) Prepare a statewide plan for the preservation of tule elk and their habitat.

The task force has been very successful in achieving its goals. The statewide tule elk population has increased from three herds and approximately 500 elk in 1973 to over 2,500 elk in 19 herds by 1988. The Management Plan for the Conservation of Tule Elk, completed in 1977 and revised in 1985, provides specific criteria for an area to be considered a suitable tule elk release site. The criteria are based not only on sound biological principles, but also take into account land use practices and the laws and regulations of the State.

The Bureau is actively involved with tule elk habitat and reintroductions in several areas of the state. For example, the Owens Valley is an arid, 75-mile-long valley in eastern California. The habitat varies from irrigated pastures on the valley floor, to desert scrub and sagebrush on the alluvial fans, to coniferous forests in the mountains. Of the 200,000 acres within the current range of tule elk, the city of Los Angeles and private interests own about 90,000 acres (46 percent), and BLM and Forest Service administer about 55,000 acres (27 percent) each.

Although the majority of the habitat is in fair to good condition, vegetation transect studies show that a few areas are in unsatisfactory condition because of over-utilization by livestock and wildlife, and two years of below normal precipitation. Preliminary groundwater studies indicate that the single most important factor affecting the quality of the range in the Owens Valley is annual precipitation. No detrimental effects to tule elk habitat due to groundwater pumping have been observed.

The CDFG counted 563 tule elk during a November, 1988, helicopter survey of the Owens Valley and estimates there are 580-675 tule elk in the Owens Valley. As of 1988, 431 elk have been removed from the Owens Valley and relocated in other parts of the State.

The Owens Valley Tule Elk Habitat Management Plan revised and signed by BLM and other agencies in 1986 has had many of its provisions enacted. The remaining recommendations have been analyzed and will be implemented as funding allows.

A second example is Cache Creek. The Cache Creek (see page 7 for more information) herd range consists of approximately 100,000 acres of oak-grassland, chaparral and riparian habitats in the inner coastal foothills located about 60-miles northwest of Sacramento. The BLM administers approximately one-third of this land.

Much of the public land within the elk range is chaparral brushland and is less critical to the elk than the oak-grassland and riparian habitats. The majority of the latter habitat is in private ownership even though BLM and the Department of Fish and Game have recently acquired some of these important areas.

Two consecutive dry years have resulted in poor forage conditions throughout much of the range. Private lands in certain areas have suffered from this. Because of these conditions, elk use has been heavy in the riparian areas of Cache Creek and Bear Creek. Due to high water flows in Cache Creek from summer irrigation releases from Clear Lake and Indian Valley Reservoir, water shortage is not a problem for the elk here, even under drought conditions. However, this does concentrate elk use in the riparian zone, where the quantity of suitable forage is limited.

The most recent aerial elk survey by the Department of Fish and Game in 1988 did not cover the entire range. The survey showed 222 elk. The results should be viewed with caution, as the southern portion of the herd's range was not surveyed. The actual estimated elk population for the Cache Creek herd is 450-525 individuals.

Elk numbers have increased in the past several years. Some of the increase is due to herd expansion in the southern portion of the Cache Creek herd range. It is known that improved forage conditions resulting from habitat improvement projects on State and Federal lands have been a benefit to the elk.

Two prescribed burning projects have also been completed within the past year, effectively improving the quality and quantity of suitable forage on approximately 675 acres. Additional prescribed burns are scheduled for other areas of elk range. Approximately 500 acres per year will be burned.

A vegetation conversion project is close to being completed in the critical Wilson Valley area. Seventy acres of star thistle have been eradicated and will eventually be replaced with native perennial grasses and clovers, primarily for elk use. A small test plot of irrigated pasture may be attempted in the future, depending upon the outcome of the wilderness or non-wildneress designation of these BLM lands.

The Cache Creek Tule Elk Habitat Management Plan by BLM and the Cache Creek Tule Elk Management Unit Management Plan by the Department of Fish and Game discusses habitat management and improvement with an aggressive program for acquisition of additional crucial elk habitat using the Wildlife Conservation Board, land exchanges, or conservation easements. The Plan also continues habitat improvement projects including prescribed burns, seedings, riparian vegetation reestablishment, development of upland water sources, construction and maintenance of protective fences, etc., in selected areas of the elk range, and increasing patrols by CDFG and BLM law enforcement officers.

EAGLES

Over 500 bald eagles winter in the Klamath Basin of northeastern California and south-central Oregon each year, attracted by thousands of migrant waterfowl on five Federal wildlife refuges. Communal roosting occurs variably between October and March, depending on waterfowl movements and weather patterns, at five scattered locations in the basin. These areas are well timbered, have favorable microclimates, and provide eagles with important thermal cover at night and during inclement weather. Mt. Dome, in northeastern Siskiyou County, is the site of one such roost.

Lands on Mt. Dome are administered by the Bureau of Land Management and Forest Service and are committed in part to protection and management of bald eagle habitat. Management plans outline important bald eagle ecology for management needs on Mt. Dome, and identify the actions and constraints necessary for the maintenance of site quality.

The BLM plan outlines short and long term measures needed to secure threatened habitats for bald eagles on public lands in the Klamath Basin. Bald eagle habitat in the designated management area is contained within a 75-acre stand of ponderosa pine near the summit of Mt. Dome. This timber stand is used as a communal roost each year by up to 250 wintering eagles, and as a nesting area by a single, probably resident, breeding pair.

Fire risks associated with steep slopes and overgrown conditions on Mt. Dome, and the typically dry climate of the region, pose a primary threat to all lands in the area. Fuels are concentrated within dense stands of mountain shrubs on the slopes below the roosting and nesting area, and in thickets of white fir within the timber stand itself. Excessive fuels could lead to partial or virtual loss of bald eagle habitat on Mt. Dome in the event of a wildfire. White fir presence suggests an additional threat: a decline in ponderosa pine dominance, with the eventual loss of the native climax community, and the preferred habitat type, in a white fir transition. The unnaturally high fuel accumulations and shifts in plant succession which currently threaten bald eagle habitat on Mt. Dome are largely a result of the exclusion of fire in this century.

Long-term measures needed to secure habitat for bald eagles on Mt. Dome are currently outlined in three planned actions, two of which deal with public use and management policies in and near the area. Currently, a wide measure of protection is provided by the site's remoteness and inaccessibility, and by general management policies in the region which emphasize range and wildlife values.

The importance of the Klamath Basin to bald eagles, and the implications of future habitat losses there, can be fully appreciated only in national and regional contexts. The bald eagle is currently classified as endangered in 43 of the coterminous 48 states, including California; it is classified as threatened in Washington, Oregon, Minnesota, Wisconsin, and Michigan; and is unlisted in Alaska. Yet, the results of nationwide breeding surveys indicate an overall upward trend in productivity and in the number of breeding pairs.

In California, the results of recent breeding surveys are encouraging. A moderate population increase and range expansion seems to be underway. Previously unrecorded occupied nests are located each year. It is unlikely that these nests were missed in previous surveys. Some pairs are believed to represent additions to California's breeding population.

An increase in the number of known breeding pairs is also apparent in the seven-state Pacific Recovery Region. Much of this increase undoubtedly is due to more intensive survey efforts. However, as in California, the increase in part seems to represent additions of new breeding pairs. Productivity also seems sufficient to suggest that a moderate population increase is underway in the region. (Also, see discussion of eagles in Cache Creek section, page 7)

NORTHERN SPOTTED OWL

The northern spotted owl occurs in significant numbers on public lands only in the forests of western Oregon. In northern California, BLM holdings consist largely of scattered tracts and very little old growth which provides nesting habitat for less than 20 known pairs of this candidate species. By contrast, hundreds of pairs occur on USFS lands at higher elevations in California.

Management and protection of spotted owl habitat is an integral part of the old growth forest issue championed by a large coalition of conservation groups. Depending on the outcome of court challenges in Oregon, BLM will continue to specify standards and guidelines for spotted owl habitat management as part of its land management planning process.

BLM, FWS, USFS, and NPS recently signed a Memorandum of Understanding to ensure that population status of the spotted owl does not decline to a level where Federal listing under the

Endangered Species Act would be required. Each agency will also cooperate and share scientific data on spotted owls toward reaching a common goal. However, if the ongoing effort to list the species as threatened is successful, the Bureau will comply with all provisions of the Endangered Species Act as it does for all listed species.

An example of BLM , The Nature Conservancy, and the University of California's concern for old growth habitat that supports the spotted owl is the recent three-year pact covering the use and management of the magnificent Northern California Coast Range Preserve in Mendocino County. Under terms of the agreement, the 3,940-acre site will be administered by the Berkeley campu s of University of California as part of the University's Natural Reserve System with The Nature Conservancy sharing in costs and management.

The preserve comprises old-growth forest and pristine watersheds typical of the once widespread mixed-evergreen forest of California's North Coast Range. Ecologists recognize it as the largest undisturbed stand of rare and endangered old-growth Douglas fir haibtat in a protected status in California.

It has been recognized for its scientific and educational values by designation as a Man and teh Biosphere Preserve, and Elder Creek, a North Coast silver salmon and steelhead trout stream, has been designated a Natural History Landmark. Contained within the Preserve are several wildlife species that are classed as threatened or endangered such as the Olympic salamander, the red tree mouse, the California redback vole and the northern spotted owl.

BIGHORN SHEEP

BLM biologists and managers have been working with state wildlife agencies, private individuals, and conservation groups to enhance bighorn sheep habitat for over 20 years. Population surveys of bighorn now put California's total at more than 4,700 animals. These surveys show a rise of more than 1,000 in the number of sheep over the past 15 years.

The 1873 California law that afforded maximum protection to bighorn sheep was necessitated by a decrease in the numbers of these animals. This decline was due in part to illegal hunting by poachers, the animals' susceptibility to disease, competition for water from feral burros that roam the southwest desert, drying up of springs and seeps, and human encroachment.

In 1987, for the first time in 114 years, permits for the hunting of nine rams in California were auctioned. A surplus of older rams exist in the Marble and Old Dad Mountain ranges, and wildlife experts did not feel that a limited hunt would threatened the recovery effort. The legislation signed in 1986 by the California Governor to allow a limited hunt also removed the animal from the protected species list. While the sheep were on the list, the State couldn't legally spend money from the Fish and Wildlife Preservation Fund to help them. Now, more money is expected to be available for conservation projects.

A BLM rangewide herd management plan addresses bighorn sheep management throughout California. It also establishes management priorities based on herd viability and the amount of BLM lands used as habitat. Habitat areas that consist of at least 50 percent BLM lands are considered to be areas in which BLM has both substantial management responsibility and substantial control over other land-use activities.

As an extension of the rangewide plan, herd management plans are being developed for most of the 63 individual herds of bighorn that reside in California. These plans detail the specific needs of each herd including water sites, necessary road closures, etc.

Major herd management plans have been completed by BLM specialists over the past three years for several areas including: McCain Valley, Orocopia, Clark Range, New York Mountains, Sheep Hole Mountains, and Argus Range.

Habitat areas free of conflicting land-use activities are identified through BLM's land-use planning process. Areas to be managed for the purpose of supporting viable populations of bighorn sheep are identified in Resource Management Plans (RMPs) along with general actions necessary to resolve conflicting land-use activities.

Several bighorn sheep herds in the west have experienced population explosions, followed by major die-offs and/or extremely high lamb mortality. One such population is the Santa Rosa Mountain herd. This bighorn population is being cooperatively managed with the California Department of Fish and Game under a Sikes Act HMP. Since 1977, the Santa Rosa bighorn population has experienced over 90 percent mortality. In an attempt to determine the cause of this high mortality, the Bighorn Research Institute has initiated an effort to isolate the cause and rehabilitate the herd. In addition to determining the cause of unacceptably high lamb mortality, the Bighorn Research Institute is gathering a great deal of data which will aid BLM in management of bighorn sheep.

Over the past four years, six bighorn relocations have been performed as cooperative ventures by BLM, the California Department of Fish and Game, and the Society for the Conservation of Bighorn Sheep. In 1986, 44 bighorn, 25 from the Kelso Peak/Old Dad Mountains and 19 from the Marble Mountains, were released in the Sheephole Mountains to augment a population of approximately 5 existing sheep. Aerial counts and ground counts now indicate a reproducing population of 25 animals in the area of release.

The remaining 28 bighorn from this capture were released in the Whipple Mountains. Due to a high intrusion of burros and recreation use along the Colorado River, there had been no bighorn in the Whipples since the 1950's. After burro removals and the addition of watersites in the mountains, the transplants began. The minimum estimated population in the Whipples is now 100 animals.

The greatest problem facing wildlife in the desert is access to water. In unique cooperative agreements, BLM, together with the Department of Fish and Game and the Society for the Conservation of Bighorn Sheep, constructs guzzlers throughout mountain ranges that serve as bighorn habitat. Under these agreements, BLM furnishes materials or funds needed to construct guzzlers. More than $2 million has already been spent to build watering units, and additional funds will be used for disease prevention and in transplanting sheep to areas where native populations have disappeared. Money may also be spent to buy privately owned land that is natural habitat.

In 1989, BLM issued patent to the Bighorn Research Institute on 300-acres of public lands near Palm Desert for use as a research center and future bighorn sheep educational museum. The facility is being used by the Institute, in cooperation with BLM, to study diseases causing fatalities among bighorn sheep herds. One special research aim is discovery of a virus thought to be responsible for die-offs in some herds. If successful, the program could benefit bighorn herds throughout the west.

COACHELLA VALLEY FRINGE-TOED LIZARD PRESERVE

The Coachella Valley Preserve is a 13,000-acre preserve 10 miles east of Palm Springs in the California Desert and two satellite areas that are permanent refuges for the fringe-toed lizard and a number of other rare or unusual species. The complex is jointly owned and managed by the BLM, The Nature Conservancy, the U.S. Fish and Wildlife Service, and the California Department of Fish and Game.

In fact, more than 180 species of wildlife, including four others considered rare, can be found there. These are: the Coachella round-tailed ground squirrel, the giant red velvet mite, the flat-tailed horned lizard, and the giant palm-boring beetle.

The area also provides unique Desert habitat for 25 birds, including Gambel's quail, American kestrel, greater roadrunner, burrowing owl, cactus wren, poorwill, cedar waxwing, and northern mockingbird.

For thousands of years, particles of sand from the nearby San Bernardino Mountains and Indio Hills have been washed and blown into the Coachella Valley, forming a dunes system that is home to a variety of wildlife and plants. Among these are the Coachella Valley fringe-toed lizard, which depends on the wind-blown sand dunes, covering some 200-square-miles, for survival. In the early 1940s, the human population of that area was about 12,000 people; by the 1980s, the population had grown almost 20 times, exceeding 220,000 residents.

The lizard and its human neighbors in the Coachella Valley were not long ago engaged in a classic story of progress versus preservation that threatened both the lizard and the growth on which its human neighbors thrived.

By October 1980, the U.S. Fish and Wildlife Service listed the lizard as "threatened" under the Endangered Species Act. Due to provisions of the Act which prohibit the "taking" or harming of any threatened species, the listing of the lizard created an adversary relationship between developers and cities in the Coachella Valley and State and Federal agencies responsible for enforcing the Endangered Species Act.

In 1983, a joint committee of BLM and other Federal, State and local agencies was formed to work with developers and local environmental groups to develop a strategy for addressing the problem.

The Nature Conservancy, a private group dedicated to preserving natural areas, took the lead coordination role in bringing together all the parties to develop a habitat conservation plan that would ensure preservation of the species while allowing development of parts of the species habitat for human use. The goal was not only to preserve the lizard's critical habitat, but also a buffer area and a major source of blow sand on which the species depends This includes the main preserve, managed jointly by the cooperators, as well as two satellite preserves (Willow Hole-Edom Hill and one east of Indian Avenue) managed by BLM.

The acquisitions were made through a combination of BLM land exchanges and land purchases using the Federal Land and Water Conservation Fund, private donations, and a $600 per acre fee paid by nearby developers. The BLM has exchanged lands valued at more than $6 million, and about 95 percent of the preserve is now owned by the cooperating agencies.

In addition to the blow-sand dunes that are critical to the lizard's survival, the Coachella Preserve also contains several palm oasis woodlands. These pockets of water and vegetation are the result of the area's geological structure that allows water flowing underground to rise to the surface.

These oases, particularly the spectacular Thousand Palms Oasis within the preserve, provide unique habitat for the wildlife there. The Thousand Palm Oasis gets its name from the more than 1,200 native California palms found there.

Other vegetation in the area includes creosote bush, encelia, borrobrush, smoke tree, and desert lavender.

This special combination of natural features has resulted from the heavy rains that for thousands of years have washed sand and gravel from the nearby hills into the valley. The area's strong winds have blown the sand into dunes, which are constantly changing, providing habitat for a diverse group wildlife and vegetation.

PART THREE—SPECIAL INITIATIVES -RIVERS, RIPARIAN SITES, AND ACECs

The Upper Sacramento, North Fork of the American and Merced River Projects represent three sensitive areas in terms of critical acquisition needs to support the BLM's river management program. Both the Merced and the North Fork of the American River are Congressionally designated Wild and Scenic Rivers. The acquisition of key parcels along these two rivers is critical to preserve and manage public access, which will protect/maintain the wild and scenic quality of these river corridors. Proposed acquisitions along the Upper Sacramento will protect critical riparian and wildlife habitat along the river as well as assure public access to significant recreational opportunities. Cedar Creek, located on the Lassen/Modoc County line 25-miles southeast of Alturas, is an eight-mile-long creek undergoing complete riparian and streamside work. All these projects continue to receive broad-based support from local governments, the public and a variety of conservation and interest groups.

UPPER SACRAMENTO RIVER

The BLM's Upper Sacramento River project represents a critical component of a comprehensive river management plan supported by a consortium of state, county, and private entities, the Bureau of Reclamation, and U.S. Corps of Engineers. The BLM-managed section occupies approximately a 7-mile stretch of the river extending from Jellys Ferry to Paynes Creek above Red Bluff. Since the initiation of our first Sacramento River Activity Management Plan in 1982 we have acquired approximately 2,300-acres via exchange and 1,300-acres through direct acquisition (Land and Water Conservation Funds). These lands encompass critical riparian habitat and have enhanced river recreation opportunities for the public.

We plan to complete one key acquisition of 300-acres (Jellys Ranch property), which represents both critical river access and wildlife habitat, next year. We are also presently involved with the Trust For Public Lands in developing a proposed acquisition and/or exchange for 1700 acres along the river corridor. In addition, we are continuing to pursue opportunities to acquire "scenic" or "conservation" easements for river frontage areas. This latter initiative could involve donations or Challenge Cost Share opportunities. Funding opportunities in the near future include $600,000 (Jellys Ranch Acquisition) for fee acquisitions and $100,000 for labor and support costs. To complete all acquisitions key to the management of the Upper Sacramento River we have roughly estimated $3,000,000 to acquire approximately 4700-acres.

NORTH FORK OF THE AMERICAN RIVER

The North Fork of the American River not only represents outstanding character as a wild and scenic river but also presents outstanding recreational opportunities, such as "white water" and fishing activities. Public access needs and preservation of the scenic qualities of the river corridor are two key objectives/goals in our management plan. Since we initiated this project we have acquired, through land exchange, approximately 2,190-acres in key areas along the river. Of the 15-miles of river corridor managed by BLM only 1/2 mile remains to be acquired to complete the acquisition phase of this project.

Three acquisitions remain, with an aggregate acreage of 610-acres. To complete planned acquisitions for this project we have identified a need of $250,000 to start the acquisition of land we have been unable to complete through exchange. Our total requirements to complete this project by 1991 projects an additional need of roughly $350,000. We plan to initiate final negotiations on these acquisitions as soon as funding is secured.

MERCED RIVER

The Merced River flows out of Yosemite National Park through National Forest lands, private lands, and public lands some 43-miles where it joins the North Fork of the Merced River on private lands. These 43-miles plus 71-miles of the North Fork have been designated by Congress as a Wild and Scenic River. BLM has responsibility for the protection of the scenic qualities and access to the land outside the National Forest. Wildlife is abundant and diverse along the river, including great gray owls which nest in Yosemite and winter in this area. This segment of river crosses nine parcels of private property. Additional private properties are downstream of the confluence.

A key exchange was completed this year for 20 acres that provides river access in the area of the Briceburg Bridge. This area provides the only vehicle access on this part of the Merced River. Next year we are proposing to acquire one of two critical 160-acre parcels at a cost of approximately $200,000. We are also proposing to proceed with two exchanges totaling 80-acres. The total acquisition and processing cost identified for the Merced River is $250,000 next year, and another $250,000 for the remaining 160-acre parcel.

CEDAR CREEK

The Cedar Creek Watershed Improvement Project is part of a comprehensive BLM management plan for a 60,000-acre grazing allotment, located in BLM's Alturas Resource Area on the Lassen/Modoc County line, 25-miles southeast of Alturas, California.

Features of the Cedar Creek Watershed include:

- 8.5 miles of perennial creek, which lie on private land within the allotment;
- numerous single spring sources and one high-volume cluster of springs, which are tributaries to Cedar Creek;
- extensive spring and meadow complexes;
- high quality mule deer habitat;
- 9,275 AUM's (Animal Unit Months) of active livestock grazing privileges.

The allotment, containing approximately 12,000-acres of private land, is suffering from a heavy invasion of western juniper. Big sagebrush has reached extreme density, suppressing production and availability of perennial grasses. Livestock are being forced into lowland riparian areas due to poor forage conditions, and this concentrated grazing use has removed bank vegetation, de-stabilized banks, and lowered water quality and fisheries habitat. The lack of healthy riparian vegetation has created high instream water temperatures and a loss of important wildlife habitats.

The Izaak Walton League's Public Lands Restoration Task Force has agreed to help mobilize volunteers in 1990 to complete on-the-ground improvements along eight miles of Cedar Creek and its adjoining watershed near Tule Mountain. This marks the first time that a California project had been singled out for action by the League's volunteers, who have been assisting in public lands restoration projects nationwide for three years. The league selects three sites annually and helps mobilize hundreds of volunteers to carry out work projects.

The project is being carried out through a cooperative agreement between BLM and the owners of the land across which Cedar Creek flows. Landowners signed a conservation easement guaranteeing the public access to the land along the creek for hunting, fishing and other recreation activities and giving BLM permission to complete riparian or streamside improvement work.

Goals of the plan include reestablishment of a cold water trout fishery that has declined in recent years, watershed improvements on the uplands that feed the creek, fencing of creek areas to assist in livestock grazing management, a series of prescribed burns in the Tule Mountain area, aspen stand rejuvenation, and spring developments and fencing projects.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

An Area of Critical Environmental Concern (ACEC) is a special designation created by Congress in the 1976 Federal Land Policy and Management Act (FLPMA). These are areas of public land where BLM has determined through land use planning that special management attention is required to protect important historic, cultural, or scenic values, fish and wildlife resources and other natural systems or processes, or to protect life and safety from natural hazards.

Congress directed the Secretary of the Interior to (1) promptly develop plans and regulations for the protection of ACEC's, (2) give priority to ACEC's in developing and maintaining inventories of the public land, and (3) give priority to the designation and protection of ACEC's in developing and revising land use plans.

BLM regulations require that areas having potential for ACEC designation and protection management be identified and considered throughout the resource management planning (RMP) process. BLM's intent is not to identify and designate all areas that have special values, but to focus on those requiring special management attention.

To become a potential ACEC considered in the alternatives in the draft RMP, the recommended areas must meet criteria of being both relevant and important. The first assures that ACECs apply only to the resources, values, system or process, or hazards called for in the FLPMA; the latter assures they have substantial significance and value. At least one of the factors for relevance must be met before moving on to importance. Then at least one of the factors for importance must be met for the area to be considered a potential ACEC.

BLM California protects and manages more than a hundred public land areas which have the distinction of being designated as ACECs. These areas stretch from the North Coast, east into Nevada, and south to the very tip of California along the Mexican border. BLM-California manages almost half of the ACECs designated nationwide. California ACECs that were set aside for wildlife habitat and, in some cases, other special values are listed in Appendices 3.

Activities can be allowed in ACECs as long as they do not damage or destroy the special values identified. BLM determines which uses are compatible through the development of an individual management plan for each ACEC. This site-specific plan sets out how BLM will manage the area to protect the special values identified and what other uses are compatible with the management priority.

The ACECs identify habitat havens for wildlife including federal and state listed rare and endangered species and important riparian areas. BLM, other agencies, and the public identify areas for review and designation as ACECs.

Site-specific management plans are prepared for each ACEC, and where a management plan has not yet been initiated or is only partially completed, proposed actions that might conflict with the primary reasons for why the ACEC was established must be addressed in an environmental assessment or environmental impact statement with public notice and participation.

Most of these ACECs have become part of the State's Natural Heritage Program, of which BLMis a key player along with The Nature Conservancy, California Department of Fish and Game,Fishand Wildlife Service, U.S. Forest Service, California Department of Parks and Recreation,National Park Service, State Lands Commission, and University of California. The BLM and The Nature Conservancy, for example, signed this spring a cooperative agreement for the management of the Northern California Coast Range Preserve in Mendocino County to protect the physical and biological systems from destructive human disturbances and maintain these systems in their natural state.

PART FOUR—WILDLIFE PROGRAM IMPLEMENTATION

Inherent in the Bureau's authorities is a mandate toward which the Bureau strives in its wildlife programs. The Federal Land Policy and Management Act of 1976 (FLPMA) formalizes the principles of multiple use and sustained yield as Bureau missions. Wildlife is identified as one of the principal or major uses of public lands. Management and preservation of wildlife as a principal multiple use results in a goal of maintenance of habitat diversity. In fact, present habitat diversity on BLM-administered lands exceeds that on the lands of any other landowner in the Nation—governmental or private. High diversity and low human disturbance within food chains generally yield healthy wildlife populations. Healthy populations offer more management options for maintenance or improvement of their well-being than do threatened or endangered species for which stringent management strategies necessary for recovery diminish available options. Thus, the identification and maintenance of management options through conservation of non-listed species is of benefit not only to the Bureau, but also to wildlife in general.

AUTHORITY

The past decade has seen great changes in the attitudes of the public towards use of lands which BLM administers under its multiple-use mandate, FLPMA. Such changes have resulted in improved management of natural resources on public lands, including wildlife resources. Vast expanses of prairie, deserts, mountains, and forests, as well as special habitats (floodplains, islands, cliffs, and rock outcrops) provide shelter and food for both game and nongame wildlife, furnish nesting sites and nourishment for millions of birds, and fascinate those people who enjoy open space and natural settings.

Indeed, some of the Nation's most important wildlife habitats exist on public lands, and therein lies the essence of the Bureau's responsibility as set forth in FLPMA:

> "The Congress declares that it is the policy of the United States that...management be on the basis of multiple use and sustained yield unless otherwise specified by law; the public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmosphere, water resource, and archaeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use...."
>
> "The Secretary shall prepare and maintain on a continuing basis an inventory of all public lands and their resource and other values...."

In the development and revision of land use plans, the Secretary shall —

> "give priority to the designation and protection of areas of critical environmental concern;"
>
> "consider the relative scarcity of the values involved...;" and
>
> "coordinate the land use inventory, planning, and management activities of or for such lands with the land use planning and management programs of other Federal departments and agencies and of States and local governments within which the lands are located...."

The principal management responsibility of BLM in relation to wildlife concerns habitat. State wildlife agencies and the U.S. Fish and Wildlife Service (FWS) have responsibility for species management, though the two responsibilities cannot—and need not—be separated completely, particularly in light of the Endangered Species Act of 1973 and recent U.S. Supreme Court decisions regarding the authority of the Federal Government over wildlife on Federal lands.

PROCEDURES AND POLICIES

1. Inventory - Bureau policy instructs that wildlife inventories be conducted to provide information needed for management of BLM-administered lands. Inventories are done in response to Bureau planning efforts or as part of environmental work (NEPA compliance) associated with specific projects. Through these means, and through monitoring and research, the Bureau has amassed large quantities of information on wildlife populations and habitats—and will continue to do so.

2. Planning - the optimal long-term process for BLM consideration of wildlife habitat is the Bureau Planning System. Bureau plans are prepared in direct compliance with FLPMA and are based in part on the continuing inventory mandated by that law. Management Situation Analyses are developed to clearly identify means of protecting wildlife habitat and other resources. Appropriate considerations can be made during development and analysis of alternatives. These analyses lead to formal Resource Management Plan recommendations. Older Management Framework Plans are currently being replaced by new generation Resource Management Plans.

   Bureau planning policy includes application of the principle of multiple use/ sustained yield; use of a systematic interdisciplinary approach to achieve integrated consideration of physical, biological, economic, social, and environmental aspects of public land management; giving priority to identification, designation, protection, and management of Areas of Critical Environmental Concern; considering the relative scarcity of the values involved; weighing long-term vs. short-term benefits and detriments; and extensive coordination with other Federal departments and agencies, state and local governments, and Indian tribes.

3. Site-specific activity plans, such as Habitat Management Plans for wildlife, Allotment Management Plans for grazing prescriptions, and Timber Management Plans for forestry programs, are prepared to implement Resource Management Plans (land-use plans) in a particular area. Wildlife needs are considered and met as components of such activity plans. Examples include prescribed burning to improve deer range which might also increase vulnerability of raptor prey; cattle exclosures to preserve riparian areas which could provide nest sites for raptors; and design of timber sale areas which might protect spotted owl nesting territories or create open canopy areas to facilitate hunting by northern goshawks.

4. Environmental Assessment - the Bureau planning system requires continual updating to remain current and to gain greater specificity. Updating is accomplished at least in part through implementation of Bureau policy to ensure that Bureau planning and NEPA compliance efforts are integrated. These processes provide a clear and logical progression from planning through accomplishment, thereby avoiding duplication of effort to the extent possible. Through the development of NEPA documents and implementation of resulting decisions, project-by-project efforts to manage and protect wildlife and wildlife habitats on public lands are accomplished.

   In the absence of complete planning system data and documents, the Bureau often has an immediate need for better information with which to make project-specific recommendations. Wildlife habitat management objectives are usually developed during the preparation of environmental compliance documents (environmental assessments, impact statements, impact reports, etc.) required by NEPA and associated regulations (40 CFR 1500-1508). Gathering data for environmental documents does not, however, yield all necessary information, such as trend data.

5. Monitoring - Bureau policy is to implement monitoring activities that reflect a long-term commitment to management of renewable resources that will assist in evaluation of cumulative impacts of implementing land-use plans and records of decision.

BLM monitoring for the benefit of wildlife occurs in five forms:

a) monitoring to determine population trends;

b) monitoring to determine habitat trends;

c) monitoring of actions called for in Habitat Management Plans and other activity plans;

d) monitoring compliance with stipulations contained in Bureau decision documents; and

e) monitoring to determine if mitigation measures are effective.

While a broader BLM wildlife habitat monitoring program is needed, great strides have been made in recent years. Also, as technology is developed for evaluating general effects of surface-disturbing activities, certain wildlife species may be useful as indicators of the vigor of ecosystems and thus would take on a greater significance in the Bureau's efforts to monitor habitat quality.

INTERAGENCY COORDINATION AND COOPERATION

Coordination and cooperation are very important attributes of the Bureau's program to manage and conserve wildlife and wildlife habitats. Such coordination and cooperation is accomplished primarily through compliance with FLPMA; the Endangered Species Act of 1973, as amended; the Sikes Act; national level interagency memoranda of agreement; BLM/state intergovernmental memoranda of understanding; cooperative planning efforts; various other Federal environmental and wildlife laws; similar state legislation; etc.

1. Management of Candidate, Threatened, and Endangered Species. Bureau policy is to conserve federally listed and state-listed endangered or threatened species and to utilize its authorities to further the purposes of the Endangered Species Act. Some of the most extensive cooperation and coordination between BLM and FWS involves project-by-project consultation on all Bureau actions which may affect threatened or endangered species or modify or adversely affect their critical habitats. Hundreds of Bureau actions receive scrutiny each year pursuant to Section 7 of the Endangered Species Act.

Considerable protection is provided to habitat of officially listed species, as well as to that of species which are candidates for listing. Protection is given through development (in cooperation with the FWS) and implementation of reasonable and prudent alternatives, advisory recommendations, and statements of incidental take. These protections form the substance of Endangered Species Act Section 7 biological opinions and FWS responses to requests for informal consultations and technical assistance.

A Memorandum of Understanding (MOU) between the Bureau, U.S. Fish and Wildlife Service, California Department of Fish and Game, California Energy Commission, California Department of Conservation, and the County of Kern was signed on April 17, 1989. The purpose of the MOU is to establish the Kern County Endangered Species Program, for the conservation of species of concern in Kern County. The program's intent is long-term protection of these species and coordinated, effective, and timely resolution of conflicts between development and the conservation of these species. Two plans, the element plan and the habitat conservation plan, will allow this to happen by standardizing mitigation/compensation measures, by eliminating the need for case-

by-case review of development projects, and by allowing some incidental take of species of concern. The plans allow development to continue while at the same time allowing conservation of important plants and animals.

Bureau policy ensures that crucial habitats of sensitive species will be managed and/or conserved to minimize the need for future listing by either Federal or state governments.

Cooperation and coordination are also fostered through BLM participation on recovery teams and through BLM implementation of recovery plan recommendations. Most recovery teams in California have BLM representatives. In addition, numerous interagency working teams, task forces, and other advisory groups have been formed to direct implementation of recovery plans or to develop and implement other plans that benefit wildlife. BLM representation on these groups is very active and productive.

2. Management of Other Special Status Species. Other Special Status Species include BLM sensitive species and state-listed species. It is the Bureau's policy to ensure that actions authorized, funded, or carried out do not contribute to the need to federally list any species as threatened or endangered. Evaluation of Bureau actions includes requests for technical assistance from FWS and state wildlife agencies, cooperatively funded surveys and monitoring efforts, sharing of data and expertise, etc.

3. Implementation of the Sikes Act. Most of the Bureau's Habitat Management Plans are developed under the Sikes Act, Title 2—Conservation Programs on Certain Public Land. Strong BLM/state wildlife agency cooperation is mandatory for all Sikes Act Habitat Management Plans:

   "The Secretary of the Interior...shall, in cooperation with the State agencies..., plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game...."

   "Each State may enter into a cooperative agreement with...the Secretary of the Interior with respect to those conservation and rehabilitation programs to be implemented under this title within the State on public land which is under his jurisdiction...."

   "Each cooperative agreement entered into under this subsection shall...provide for fish and wildlife habitat improvements or modifications, or both; provide for range rehabilitation where necessary for support of wildlife; provide adequate protection for fish and wildlife officially classified as threatened or endangered...; (and) require the control of off-road vehicle traffic...."

   These statements from the Sikes Act have been incorporated as Bureau policy. All Habitat Management Plans are to be prepared under Sikes Act authority unless state wildlife agencies choose not to participate.

4. Natural Area Management. The BLM in California has entered into a MOU with public and private organizations to coordinate natural area identification, designation, and management.

   Parties to this agreement are BLM, the California Department of Fish and Game, the California Department of Parks and Recreation, the State Lands Commission, the University of California Natural Reserve System, the National Park Service, the U.S. Fish and Wildlife Service, the U.S. Forest Service, the Pacific Southwest Forest and Range Experiment Station, and The Nature Conservancy. All of these organizations actively participate in an Interagency Natural Areas Coordinating Committee.

The Directors of these organizations recently agreed to a two-year action plan, including holding a series of technical and executive workshops involving agencies at the field office level. Emphasis will be given to holding workshops in areas in the process of developing land use plans. The overall goal is to ensure protection of both rare and representative plant communities by identifying the "best-of-the-best," while at the same time avoiding duplication of effort.

RESEARCH, DEVELOPMENT, STUDIES, AND INFORMATION TRANSFER

The Bureau has been a leader in habitat management research, development, and information transfer for decades. Bureau expertise coupled with the multiple-use/sustained-yield mission of the Bureau led to habitat considerations to benefit wildlife. BLM has conducted hundreds of wildlife research projects, studies, and inventories, from intensive research necessary to establish and maintain special wildlife areas to very specialized studies of wildlife habitat relationships.

1. Research and Development. BLM research and development policy states that projects shall be applied and necessary to provide management direction. Approved research and development projects are conducted and evaluated, data are analyzed, and reports are written and distributed according to a formal process with two-+to three-year lead times and very close scrutiny by management at all levels.

2. Studies. While not generally considered research by the Bureau, studies account for much of the Bureau's information gathering to benefit wildlife. Studies are distinguished from research projects as being short-termed, small in scope, site specific, and directly applicable to immediate management needs.

3. Information Transfer. BLM policy is to include technology transfer plans in all project prospectuses and to transfer information on a need-to-know basis. In addition to project-driven information transfer obligations, several Bureau initiatives are also important. Literature-based information systems in the California State Office of BLM dealing with raptors and California endangered species are the largest such computerized systems available. Information is received from all over the world and is compiled, computer listed, and made available to anyone interested, at standard U.S. Government copying fees.

   Existing technology transfer programs handle hundreds of inquiries each year from specialists, consultants, academicians, and managers. BLM specialists are also active in attending professional conferences to share their expertise.

BLM Library
Denver Federal Center
Bldg. 85, OC-521
P.O. Box 25047
Denver, CO 80225

WILDLIFE PROJECTS

The following sample of projects show the variety of wildlife habitat management projects that have resulted in the past few years. These common wildlife projects are seldom as exciting as reintroduction of raptors or pronghorn antelope, but they reveal the day-to-day work of wildlife specialists and others to ensure healthy habitat such as seeding, burning decadent chaparral, installing guzzlers, and constructing fences.

- Clark Canyon Stream Improvement - constructed two large gabions; five small check dams were constructed in meadow to arrest channel cutting.
- Adobe Valley Pronghorn Habitat Improvement - eight hundred acres were aerially seeded with seven varieties of forbs; fence modifications to pronghorn standards; additional antelope were relocated from northern California to Adobe Valley.
- North Potato Peak Meadow Restoration - fence construction to protect 15 acres of meadow habitat to benefit sage grouse and pronghorn.
- Coalinga Mineral Springs Burn - improved deer and upland game habitat.
- Panoche Habitat Improvements - Guzzler tank
- Halls Gulch Water Development - installed three new guzzlers and reconstructed three spring developments.
- Thatcher Ridge Burn - burned 1,400 acres of decadent chaparral at three separate sites, resulting in 10,000 acres of improved wildlife habitat.
- Bighorn Guzzlers - three 1,600 gallon guzzlers were constructed in the Orocopia, Chuckwalla and Whipple Mountains to provide additional water for desert bighorn sheep. Fence materials were flown into McCain Valley for a fence excluding cattle from critical Peninsular bighorn sheep range.
- Fresno/San Benito/Monterey County Burns - burned 400 acres at Condon Peak and 200 acres at Coalinga Mineral Spring in mosaic pattern to break up dense stands of decadent chamise to benefit deer.
- Cow Mountain - burned 900-acres of decadent deer range in mosaic pattern.
- Cinder Pit Burn - for deer habitat improvement.
- Snowstorm Guzzlers - installed five guzzlers for nongame and upland game species in the Snowstorm area.
- Sand Creek Riparian Protection - construction of 5.7-miles of fence to protect riparian habitat.
- Indian Valley Water - three 1,000 gallon fiberglass guzzlers were installed in the Knoxville area.
- Weaver Creek Fish Improvement - 580 cubic yards of quarry rock and 2,115 cubic yards of river rock were excavated and placed in river channel. Channel was realigned and several hundred seedlings were planted to improve steelhead spawning habitat.

- San Benito County Waters - installed one 2,100 gallon parabolic guzzler in Byles Canyon.

- Piute Creek - temporary enclosure and bird boxes established, tamarisk removed and replaced with cottonwood plantings, seven fledging elf owls were reared by Santa Cruz Predatory Bird Research Group and released in 1986; additional work includes dredging at Soda Springs to rehabilitate Mojave chub habitat.

- Bass Hill Bitterbrush Planting - several thousand bitterbrush seedlings were planted on 500 acres at Bass Hill to improve forage availability on important deer winter range.

- Williams Hill - burned 1,200-acres of dense decadent chaparral to improve deer range.

- Bly Tunnel Plug - Eagle Lake fisheries habitat protected by the completion of a permanent concrete structure plugging the Eagle Lake Tunnel.

- Mt. Dome Peregrine - two young peregrines fledged by prairie falcon surrogate parents in June 1987.

APPENDICES

APPENDIX 1—CHALLENGE GRANT FUNDING - WILDLIFE/FISHERIES/ ENDANGERED SPECIES

Species or Habitat	Estimated $ ($000) BLM	PVT./ST.	Type of Project
Carrizo Plain Natural Area	75	100	Support of Land Exchange, Inventory, Planning Research
Bald Eagle & Peregrine Falcon	10	17	Habitat Protection and Reintroduction
Black-Tail Deer	20	80	Habitat Manipulation (Prescribed Burning)
Desert Bighorn Monitoring	62	127	Water Development and Transplant
Black-Tail Deer	36	38	Vegetation Manipulation and Water Development
Owens Pupfish	26	30	Habitat Restoration and Monitoring
Desert Tortoise	120	150	Population Dynamics and Disease Study
TOTAL	349	542	

APPENDIX 2—PROPOSED CHALLENGE GRANT FUNDING - WILDLIFE/ FISHERIES/ENDANGERED SPECIES (POTENTIA OPPORTUNITIES)

Species or Habitat	Estimated $ ($000) BLM	PVT./ST.	Type of Project
Desert Bighorn Population Studies, Research	150	386	Inventory in Support of Acquisition,
Threatened and Endangered Plants and Animals	160	336	Habitat Protection, Information Development, Population Monitoring, Veg. Manipulation, Plan Implementation
Riparian/Wetland	140	148	Habitat Protection
Areas of Critical Environmental Concern	60	60	Big Morongo Signs and Barricades
Mule Deer	194	200	Range Rehab, Monitoring, Mortality Analysis
Black-Tail Deer	36	38	Vegetation Manipulation and Water Development
Fisheries	300	350	Fish Spawning/Rearing Habitat Improvement
Desert Bighorn Sheep	100	150	Habitat Improvement and Reintroduction
Carrizo Plain Natural Area	50	50	Habitat Rehabilitation
Desert Tortoise	10	10	Public Awareness, Signing and Brochures
Areas	150	150	Protective Fencing Along Roads in High Priority
	50	50	Raven Control
Research	250	250	Population Density, Disease Study, and General
	100	100	Raven Population Monitoring Studies
Total	1,750	2,278	

APPENDIX 3—THE FOLLOWING LIST OF ACECS MANAGED BY BLM CALIFORNIA WERE SET ASIDE FOR WILDLIFE HABITAT AND IN SOME CASES, OTHER SPECIAL VALUES.

Name	County/RA	Acres	Special Values
Red Mtn. RNA	Mendocino/Arcata	6,957	Peregrine Falcon

Designated as an ACEC in December 1984, management plan currently being drafted. Jointly managed with California Department of Fish and Game. Peregrine Falcon is a federally listed endangered species.

Cache Creek RNA	Colusa/Clear Lake	8,000	Bald Eagle Tule Elk

Designated as an ACEC in November 1984, management plan signed in July 1987. Jointly managed by BLM (8,000 acres) and California Department of Fish and Game (1,500 acres). Management plan has targeted 4,000 acres to be acquired over next several years. Bald eagle is a federally listed endangered species. The tule elk (because of increased population), once classified as a California State special management species, has been re-classified by the California Fish and Game Commission as a game species.

Fish Slough	Inyo/Bishop	35,926	Owens Valley Pup Fish

Designated as an ACEC in 1982, management plan signed in October 1984. Jointly managed by BLM (32,352 acres), Los Angeles Department of Water and Power (2,766 acres), and the California Department of Fish and Game (8,08 acres). Also critical habitat for the tui chub fish, federally listed as an endangered species.

Limestone	Folsom	1,600	Salamander

Designated as an ACEC in 1986, management plan completed in draft form only in February 1989. 120 acres have been set aside as the Limestone Ecological Reserve, managed by the California Department of Fish and Game. The salamander is a California State listed threatened species, and a candidate for listing as a federally endangered species.

Panoche-Coalinga	Fresno/Hollister	12,500	San Joaquin Kit Fox Blunt-nosed Leopard Lizard

Designated as an ACEC in 1984, management plan signed in 1987. The San Joaquin kit fox and blunt-nosed leopard lizard are both listed as federally endangered species.

Blue Ridge	Tulare/Caliente	5,100	California Condor

Designated as an ACEC in 1985, management plan signed in 1985. Jointly managed by BLM (3,268 acres). U.S. Fish and Wildlife (897 acres), California Department of Fish and Game (596 acres) and other state agencies (321 acres). Approximately 6,000 acres of private land are intermixed.

Elkhorn Plain	San Luis Obispo/ Caliente	9,190	San Joaquin Kit Fox Blunt-nosed Leopard Lizard California Condor Giant Kangaroo Rat

Designated as an ACEC in 1984, management plan signed in April 1988. BLM land joins with a 160-acre ecology preserve managed by the California Department of Fish and Game. Part of Carrizo Plan Natural Area.

Soda Lake	San Luis Obispo/ Caliente	2,970	San Joaquin Kit Fox Blunt-nosed Leopard Lizard Giant Kangaroo Rat Sand Hill Crane

Designated as an ACEC in 1984, management agreement signed in 1986. Part of the larger Carrizo Plain Preserve. Jointly managed by BLM and The Nature Conservancy.

High Rock Canyon	Washoe, NV/ Surprise	12,877	Prairie Falcons Golden Eagles

Designated as an ACEC in 1983, management agreement signed in September 1987. The third highest density of raptors in the nation is found here. Jointly managed by BLM and the Nevada Department of Fish and Game. Golden eagles are protected under the Bald Eagle Act.

Unless noted, the following ACECs were designated in the 1980 Desert Plan.

Western Rand Mtn.	Ridgecrest/	6,400	Desert Tortoise Mojave Ground Squirrel

Management plan in preparation stage. Jointly managed by BLM and the California Department of Fish and Game. The desert tortoise is a federal and state candidate for listing as endangered. The Mojave Ground Squirrel is a state threatened species.

Great Falls RNA	Inyo/Ridgecrest	10,283	Brown Towhee bird

Management plan signed in May 1987. Jointly managed by BLM and the California Department of Fish and Gam. The brown towhee is a state and federally listed endangered species.

Amargosa Canyon	San Bernardino/	9,299	Amargosa Pup Fish Barstow Amargosa Speckled Dace Least Bell's Viero Amargosa Vole

Management plan signed in September 1983. Jointly managed by BLM and the California Department of Fish and Game. The Pup Fish is a BLM sensitive species and a candidate for federal listing as an endangered species. Two hundred species of birds are found here.
The viero is both a state and federally listed endangered species. The speckled dace is a BLM sensitive species and a candidate for federal listing as an endangered species. The vole is both a state and federally listed endangered species.

Kingston Range	Inyo/Barstow/	14,452	Bighorn Sheep Needles Gila Monster

Management plan is in the preparation stage. The bighorn sheep and gila monster are BLM sensitive species.

Salt Creek Hills	San Bernardino/ Barstow	2,109	Pupfish Amargosa Speckled Dace

Management plan signed in June 1982.

Clark Mtn. Natural Area	San Bernardino/ Needles	23,400	Bighorn Sheep Gila Monster 400 species of plants Mountain Lion Deer

Management plan signed in November 1985. Jointly managed by BLM and the California Department of Fish and Game.

Desert Tortoise Natural Area	Kern/Ridgecrest	15,870	Desert Tortoise, Mojave Ground Squirrel

Management plan signed in September 1988. Jointly managed by BLM and the California Department of Fish and Game. A Memorandum of Understanding exists to manage the area between BLM and the Tortoise Preserve Committee. The Mojave ground squirrel is a state threatened species.

New York Mtn.	San Bernardino/ Needles	62,720	Bighorn Sheep Gila Monster

Management plan signed in November 1985. Jointly managed by BLM and the California Department of Fish and Game.

Fort Piute	San Bernardino/ Needles	4,320	Gila Monster Elf Owl

Management plan signed in September 1982. Jointly managed by BLM and the California Department of Fish and Game.

Ft. Soda	San Bernardino/ Barstow	6,770	Mojave Tui Chub Fish

Management plan signed in January 1984. Jointly managed by BLM and the California Department of Fish and Game. The tui chub is both a state and federally listed endangered species.

Afton Canyon	San Bernardino/ Barstow	4,904	Bighorn Sheep Raptors Migratory birds Unique amphibians

Management plan to be signed in June 1989.

Big Morongo	San Bernardino/ Riverside/ Palm Springs	3,705	Least Bell's Viero

Management plan signed in August 1982. Least Bell's viero is both a state and federally listed endangered species. BLM has a Memorandum of Understanding to manage the area with The Nature Conservancy.

Chuckwalla Valley Natural Area	Riverside/ Palm Springs	3,126	Desert Tortoise Burro Deer Bighorn Sheep

Management plan signed in March 1986. There is no status on the listing of burro deer at this time. The bighorn sheep is a BLM sensitive species.

Salt Creek	Riverside/ Palm Springs	4,253	Desert Pupfish Yuma Clapper Rail

Management plan signed in September 1982. The desert pupfish is both a state and federally listed endangered species. The Yuma clapper rail is also both a state and federally listed endangered species.

San Sebastian/ San Felipe Creek RNA	Imperial/El Centro	6,337	Desert Pupfish San Sebastian Leopard Frog

Management plan signed in October 1986.

Yuha Basin	Imperial/El Centro	64,462	Flat-tailed Horned Lizard

Management plan signed in June 1981. The horned lizard is a state threatened species and a candidate for listing as a federally endangered species.

Southern E.	Imperial/El Centro	40,712	Flat-tailed MesaHorned Lizard

Management plan signed in June 1981. Jointly managed by BLM and the California Department of Fish and Game.

Willow Hole/ Edom Hill	Riverside/ Palm Springs	1,760	Coachella Valley Fringe-Toed Lizard Least Bell's Viero

Management plan signed in September 1986. The Coachella Valley fringe-toed lizard and the viero are both state and federally listed as endangered species.

Table Mtn.	San Diego/ El Centro	3,960	Peninsular Bighorn Sheep, Mule Deer

Management plan signed in October 1984. Sheep listed as a state threatened species and a candidate for listing as a federally endangered species.

In-ko-Pah Mtn.	San Diego/ El Centro	17,060	Peninsular Bighorn Sheep, Mule Deer

Management plan signed in February 1988. Jointly managed by BLM and the California Department of Fish and Game.

Saline Valley	Inyo/Ridgecrest	7,602	100s of Migratory Birds Uncommon Salt Grass Meadow Desert Bighorn

Designated as an ACEC in 1981, management plan signed in September 1982. ACEC and wildlife habitat management area. The bighorn sheep is a BLM sensitive species. Cooperatively managed with the Department of Fish and Game.

Sand Canyon	Kern/Ridgecrest	2,338	Exceptionally diverse flora and fauna

Designated as an ACEC in 1981, management plan signed in 1982.

Warm Sulfer Springs	Inyo/Ridgecrest	400	Variety of Wildlife

Designated as an ACEC in 1986, management plan still in draft form.

Corn Spring	Riverside/Indio	2,690	Riparian & Associated Wildlife Migratory Birds Elf Owl Bighorn Sheep

Designated as an ACEC in 1981, management plan signed in June 1981. The elf owl is a state endangered species and the bighorn sheep is a BLM sensitive species.

Grimshaw Lake Natural Area	San Bernardino/ Barstow	960	Amargosa River Pupfish Speckled Dace Amargosa Vole Sensitive Fish 200 species birds, incl. CA Yellow-billed Cuckoo Least Bell's Viero

Designated as an ACEC in 1983, management plan signed in September 1983. The pupfish and speckled dace are BLM sensitive species and federal candidate species. The Least Bell's viero and vole are state and federally listed endangered species. The cuckoo is a state endangered species.

S. Harper Dry Lake	San Bernardino/ Barstow	480	Yuma Clapper Rail Bald EAgle Desert Tortoise Migratory Birds

Designated as an ACEC in 1981, management plan signed in June 1982. The bald eagle is a federally and state listed endangered species. The desert tortoise is a federal and state candidate for listing as endangered. The rail is a state threatened and federally endangered species.

Big/Little Sand Spring	Inyo/Ridgecrest	259	Migratory Birds Bighorn Sheep

Designated as an ACEC in 1983, management plan completed in draft form only. Bighorn sheep is a BLM sensitive species.

Jawbone/ Butterbredt	Kern/Ridgecrest	155,435	Mojave Ground Squirrel Reptiles Birds Desert Tortoise

Designated as an ACEC in 1981, management plan signed in September 1982. The squirrel is state-listed as threatened. The desert tortoise is a state and federal candidate species. Cooperatively managed with Department of Fish and Game.

Surprise Canyon	Inyo/Ridgecrest	13,168	Scenic Bighorn Sheep Raptors

Designated as an ACEC in 1981, management plan signed in September 1982. Cooperatively managed with the Department of Fish and Game. Bighorn sheep is a BLM sensitive species.

Darwin Falls Natural Area	Inyo/Ridgecrest	1,163	Riparian Rare Perennial Water Fall

Designated as an ACEC in 1981, management plan signed in July 1982. Cooperatively managed with California Department of Fish and Game.

Goose Lake	Kern/Caliente	40	Rare, natural alkali Sink Shore Birds Raptors Waterfowl

Designated as an ACEC in 1984, management plan signed in 1986.

Point Sal	Santa Barbara/ Caliente	50	California Least Tern California Brown Pelican Southern Sea Otter Peregrine Falcon California Gray Whale

Designated as an ACEC in 1985, interim management plan signed in 1988. The tern, pelican, and falcon are all listed as state and federal endangered species. The otter is listed as a federal threatened species and the gray whale as federal endangered species.

Northern Calif Coast Range Preserve	Mendocino/Arcata	3,695	Spawning Salmon & Steelhead Old Growth Douglas Fir

Designated as an ACEC in 1981, management plan signed in 1981. Managed in cooperation with The Nature Conservancy who owns and manages the adjoining 3,400 acres of private land. One of only two sites in the U.S. designated by the United Nations as a Man in the Biosphere Reserve. It is a BLM Natural Area and National Natural Landmark.

Whipple Mtns. Recreation & Natural Area	San Bernardino/ Needles	3,431	Bighorn Sheep Desert Tortoise

Designated as an ACEC in 1981. The bighorn sheep is a BLM sensitive species. The desert tortoise is a state and federal candidate for endangered listing.

Granite Mtns. Research Natural Area	San Bernardino/ Needles	1,600	Diverse flora & fauna Desert Tortoise Bighorn Sheep

Proposed. Desert tortoise is a state and federal candidate for endangered listing. Bighorn sheep is a BLM sensitive species.

Shasta River Salmon Spawning	Shasta/Redding	3	Spawning Salmon

Designated as an ACEC in 1988.

APPENDIX 4—NATIONAL COOPERATIVE LAND AND WILDLIFE MANAGEMENT AREAS

1.	Biscar Reservoir	4,965 acres
2.	Caliente	58,868 acres
3.	Cinder Cone	27,944 acres
4.	Clear Lake	112,088 acres
5.	Jacumba	6,400 acres
6.	McCain Valley	38,692 acres
7.	Monache-Walker Pass	306,442 acres
8.	Mount Dome	22,276 acres
9.	New Idria	62,779 acres
10.	Otay	28,492 acres
11.	Panoche	50,248 acres
12.	Picacho River	40,254 acres
13.	Temblor	57,751 acres
14.	Yolla Bolly	4,620 acres
	Total	821,819 acres

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